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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,234	01/18/2002	Reza Paiam	2545-000018	7977

27572 7590 02/25/2005

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EXAMINER	
BELLO, AGUSTIN	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/051,234	PAIAM ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/24/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11-23, and 25-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Fritz (U.S. Patent No. 5,446,809).

Regarding claims 1, 17, and 25, Fritz teaches a plurality of signal splitters (reference numerals 20, 120 in Figure 1), each signal splitter having an input (reference numerals 18, 118 in Figure 1) for receiving an optical multiplexed signal therein and a plurality of outputs (reference numeral 24, 124, 26, 126 in Figure 1), each signal splitter further operable to partition the optical multiplexed signal into a plurality of optical multiplexed signals (column 3 lines 18-27), a plurality of wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) connected to the plurality of signal splitters (reference numerals 20, 120 in Figure 1), such that a wavelength selective device is disposed at each output of each signal splitter (as seen in Figure 1), each wavelength selective device receiving an optical multiplexed signal therein and operable at different wavelengths to manipulate optical data signals embodied in the optical multiplexed signal (column 3 line 28 – column 4 line 45), and a plurality of signal combiners (reference numerals 66, 98 in Figure 1) connected to the plurality of wavelength selective devices, such that each signal combiner is adapted to receive an optical multiplexed signal (reference numeral 62, 94, 142, 174 in Figure 1) via a wavelength selective device from each of

the plurality of signal splitters, with the exception of a complementary port (reference numeral 150, 96 in Figure 1), each signal combiner operable to pass the optical multiplexed signal to an outlet port (reference numeral 68, 100 in Figure 1) of the switch.

Regarding claims 2, 18, and 26, Fritz teaches that the plurality of wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) cooperatively operate to route incoming optical multiplexed signals amongst outlet ports of the cross-connect switch (column 4 lines 37-45).

Regarding claim 3, Fritz teaches that each of the wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) is operable to at least one of pass thru (e.g. when the grating is detuned from the wavelength), route (e.g. when the grating is detuned from the wavelength), or block (e.g. when the grating is tuned to the wavelength) the optical multiplexed signal received therein (column 4 lines 14-45).

Regarding claims 4 and 19, Fritz teaches that the plurality of wavelength selective devices are further defined as either wavelength selective blockers (e.g. when the grating is tuned to the wavelength), wavelength selective switches (e.g. when the grating is detuned from the wavelength) or a combination thereof (column 4 lines 14-45).

Regarding claims 5, 20, 21, 27, and 28, Fritz teaches that each signal splitter (reference numeral 20, 120 in Figure 1) is connected to at least one wavelength selective switch (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1), thereby providing signal add/drop capability.

Regarding claim 6, Fritz teaches that each signal splitter (reference numeral 20, 120 in Figure 1) is connected to at least two wavelength selective switches (reference numeral 34, 40,

46, 80, 82, 84, 128, 130, etc. in Figure 1), thereby providing redundant signal add/drop capability.

Regarding claim 7, Fritz teaches that the at least one wavelength selective switch (e.g. Figure 1 as a whole) having at least two inputs (reference numerals 22, 122 in Figure 1), a first input for receiving the optical multiplexed signal from a signal splitter (reference numeral 22 in Figure 1) and a second input (reference numeral 122 in Figure 1) for introducing an additional optical multiplexed signal into the cross-connect switch.

Regarding claim 8, Fritz teaches at least the one wavelength selective switch (e.g. Figure 1 as a whole) having at least two outputs (reference numeral 72, 100 in Figure 1), a first output connected to a signal combiner (reference numeral 66 in Figure 1) and a second output (reference numeral 100 in Figure 1) for dropping one or more optical data signals embodied in the optical multiplexed signal from the switch.

Regarding claims 9 and 23 Fritz teaches that the plurality of wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) are arranged in a cascading manner, thereby reducing the number of wavelength selective devices residing in the cross-connect switch.

Regarding claim 11, Fritz teaches receiving an optical multiplexed signal (reference numeral 10, 112 in Figure 1) at each inlet port of the cross-connect switch (Figure 1); dividing (e.g. via reference numerals 20, 120 in Figure 1) each of the optical multiplexed signals into a plurality of optical multiplexed signals; routing the plurality of optical multiplexed signals to a plurality of wavelength selective blockers (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1), where each wavelength selective blocker receives an optical multiplexed signal

therein and is operable to at least one of pass thru or block optical data signals embodied in the optical multiplexed signals, connecting (e.g. via reference numeral 66, 98 in Figure 1) the plurality of wavelength selective blockers to the plurality of outlet ports (reference numeral 68, 100 in Figure 1), such that each outlet port is adapted to receive an optical multiplexed signal via a wavelength selective blocker from each of the plurality of inlet ports, with the exception of a complementary inlet port (reference numerals 150, 96 in Figure 1); and selectively passing (e.g. via selection by controller 58 in Figure 1) the plurality of optical multiplexed signals through the plurality of wavelength selective blockers to the plurality of outlet ports, thereby routing optical multiplexed signals in the optical cross-connect switch.

Regarding claim 12, Fritz teaches using N*(N-1) wavelength selective blockers, where N is equal to the number of inlet ports. Here N=2 and Fritz teaches using at least 2 wavelength selective blockers.

Regarding claim 13, Fritz teaches that the step of connecting the plurality of wavelength selective blockers to the plurality of outlet ports further comprises adapting each outlet port (reference numerals 68, 100 in Figure 1) to receive an optical multiplexed signal (reference numerals 62, 174 in Figure 1) from each of the plurality of inlet ports (reference numeral 22, 154 in Figure 1), including a complementary inlet port (reference numeral 150, 96 in Figure 1), thereby supporting loop-back capability (e.g. loop back due to reflections from the gratings with a second traversal of the couplers in the system).

Regarding claim 14, Fritz teaches using N*N wavelength selective blockers, where N is equal to the number of inlet ports. Here N=2 and Fritz teaches using at least 4 wavelength selective blockers.

Regarding claim 15, Fritz teaches that the step of dividing each of the optical multiplexed signals into a plurality of optical multiplexed signals further comprises using a plurality of signal splitters (reference numeral 20, 120 in Figure 1), such that a signal splitter is disposed at each of the inlet ports.

Regarding claim 16, Fritz teaches that connecting the plurality of wavelength selective blockers to the plurality of outlet ports further comprises connecting the plurality of wavelength selective blockers to a plurality of signal combiners (reference numeral 66, 98 in Figure 1), such that each signal combiner is adapted to receive an optical multiplexed signal (reference numeral 62, 174 in Figure 1) via a wavelength selective blocker from each of the plurality of inlet ports.

Regarding claim 22, Fritz teaches that each signal combiner (reference numeral 66, 98 in Figure 1) is adapted to receive an optical multiplexed signal (reference numeral 64, 174 in Figure 1) from each of the plurality of inlet ports, including a complementary inlet port (reference numeral 150, 96 in Figure 1), thereby supporting loop-back capability (e.g. loop back due to reflections from the gratings with a second traversal of the couplers in the system).

Regarding claim 29, Fritz teaches a plurality of signal splitters (reference numeral 20, 120 in Figure 1), such that a signal splitter is disposed between each of the inlet ports (reference numeral 18, 118 in Figure 1) and at least two wavelength selective switches (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 30-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in view of the applicant's admitted prior art.

Claims 30 and 31 recite limitations similar to the other independent claims rejected above, and are therefore also rejected on similar grounds. These claims differs from the previously rejected claims and the prior art in that they fail to specifically teach filtering the optical multiplexed signal into first and second multiplexed signals having different bit rates. However, as admitted by the applicant (specification page 13 lines 1-5), filters operable to partition an optical band into two optical sub-band signals at different bit rates are well known in the art. One skilled in the art would have been motivated to employ the well known filters in the device of Fritz in order to accommodate signals of different bit rates. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ the well known filters admitted by the applicant in the device of Fritz.

Regarding claim 32, Fritz teaches that the plurality of wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) cooperatively operate to route incoming optical multiplexed signals amongst outlet ports of the cross-connect switch (column 4 lines 37-45).

Regarding claim 33, Fritz teaches that the plurality of wavelength selective devices are further defined as either wavelength selective blockers (e.g. when the grating is tuned to the wavelength), wavelength selective switches (e.g. when the grating is detuned from the wavelength) or a combination thereof (column 4 lines 14-45).

Regarding claim 34, Fritz teaches that each signal splitter (reference numeral 20, 120 in Figure 1) includes a number of outputs (reference numeral 22, 28, 122, 154 in Figure 1) that corresponds to the number of outlet ports (e.g. 2), such that at least one of the outputs for the signal splitter is adapted to drop an optical multiplexed signal from the optical transport network.

Regarding claim 35, Fritz teaches that each signal combiner (reference numerals 66, 98 in Figure 1) includes a number of inputs and at least one of the inputs to the signal combiner (reference numeral 150 in Figure 1) is adapted to add an additional optical multiplexed signal into the optical transport network. Fritz differs from the claimed invention in that Fritz fails to specifically teach that the number of input ports for each combiner is (N*2)-1, where N is the number of inlet ports supported by the cross-connect switch. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include any number of input ports for the combiner, since it has been held that mere duplication of the essential working parts of a device involve only routine skill in the art. *St. Regis Paper Combination of. v. Bemis Combination of., 193 USPQ 8.* Furthermore, Official notice is taken that combiners with multiple inputs including (N*2)-1 inputs are well known in the art. In this case a combiner having 3 inputs could easily have been included in the system of Fritz without departing from the spirit or scope of the invention of Fritz.

Regarding claim 36, Fritz teaches that each signal splitter (reference numeral 20, 120 in Figure 1) is connected to at least two wavelength selective switches (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1), thereby providing redundant signal add/drop capability.

Regarding claim 37, Fritz teaches that the at least one wavelength selective switch (e.g. Figure 1 as a whole) having at least two inputs (reference numerals 22, 122 in Figure 1), a first input for receiving the optical multiplexed signal from a signal splitter (reference numeral 22 in Figure 1) and a second input (reference numeral 122 in Figure 1) for introducing an additional optical multiplexed signal into the cross-connect switch.

Regarding claim 38, Fritz teaches at least the one wavelength selective switch (e.g. Figure 1 as a whole) having at least two outputs (reference numeral 72, 100 in Figure 1), a first output connected to a signal combiner (reference numeral 66 in Figure 1) and a second output (reference numeral 100 in Figure 1) for dropping one or more optical data signals embodied in the optical multiplexed signal from the switch.

Regarding claim 39, Fritz teaches a first and second set of signal combiners each connected to the first set of wavelength selective devices and including a complementary inlet port (reference numerals 66, 98 in Figure 1), but differs from the claimed invention in that Fritz fails to specifically teach a second set of filters connected the first and second set of signal combiners operable to combine the first and second signals into a outgoing multiplexed signal. However, as admitted by the applicant (specification page 13 lines 1-5), filters operable to combine an optical band into two optical sub-band signals at different bit rates are well known in the art. One skilled in the art would have been motivated to employ the well known filters in the device of Fritz in order to accommodate signals of different bit rates. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ the well known filters admitted by the applicant in the device of Fritz. Furthermore, Official Notice is

taken that forming an multiplexed signal through the use of a filter is well known in the art and would have been obvious to one skilled in the art at the time the invention was made.

Regarding claims 40-42, Fritz meets the limitations of the claimed invention with the exception of a third set of each of the components. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replicate the combiners, splitters and other components of the system of Fritz, since it has been held that mere duplication of the essential working parts of a device involve only routine skill in the art. *St. Regis Paper Combination of. v. Bemis Combination of., 193 USPQ 8.*

5. Claims 43-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fritz in view of the prior art admitted by the applicant as applied to claims 30-42, and further in view of Hamel (U.S. Patent No. 5,771,112).

Regarding claims 43 and 45 the combination of Fritz and the prior art cited by the applicant differs from the claimed invention in that it fails to specifically teach first, second, and third sets of switching devices interposed throughout the system. However, such switches are well known in the art. Hamel, in the same field of cross-connects, teaches that such switches are well known in the art (reference numeral C1, C8 in Figure 5) and easily applicable to cross-connect systems. One skilled in the art would have been motivated to include switches such as those disclosed by Hamel in the device of Fritz in order to increase the switching ability of the cross-connect of Fritz. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include switches such as those taught by Hamel through the system of the combination of Fritz and the prior art cited by the applicant.

Regarding claim 44, the combination of references differs from the claimed invention in that it fails to specifically teach a third set of signal splitters. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replicate the combiners, splitters and other components of the system of Fritz, since it has been held that mere duplication of the essential working parts of a device involve only routine skill in the art. *St. Regis Paper Combination of. v. Bemis Combination of., 193 USPQ 8.*

Regarding claim 46, Fritz teaches that the plurality of wavelength selective devices (reference numeral 34, 40, 46, 80, 82, 84, 128, 130, etc. in Figure 1) cooperatively operate to route incoming optical multiplexed signals amongst outlet ports of the cross-connect switch (column 4 lines 37-45).

Regarding claim 47, Fritz teaches that the plurality of wavelength selective devices are further defined as either wavelength selective blockers (e.g. when the grating is tuned to the wavelength), wavelength selective switches (e.g. when the grating is detuned from the wavelength) or a combination thereof (column 4 lines 14-45).

Regarding claim 48, Fritz teaches that the at least one wavelength selective switch (e.g. Figure 1 as a whole) having at least two inputs (reference numerals 22, 122 in Figure 1), a first input for receiving the optical multiplexed signal from a signal splitter (reference numeral 22 in Figure 1) and a second input (reference numeral 122 in Figure 1) for introducing an additional optical multiplexed signal into the cross-connect switch.

Regarding claim 49, Fritz teaches at least the one wavelength selective switch (e.g. Figure 1 as a whole) having at least two outputs (reference numeral 72, 100 in Figure 1), a first output connected to a signal combiner (reference numeral 66 in Figure 1) and a second output

(reference numeral 100 in Figure 1) for dropping one or more optical data signals embodied in the optical multiplexed signal from the switch.

Regarding claim 50, Fritz teaches that each signal combiner (reference numeral 66, 98 in Figure 1) is adapted to receive an optical multiplexed signal (reference numeral 64, 174 in Figure 1) from each of the plurality of inlet ports, including a complementary inlet port (reference numeral 150, 96 in Figure 1), thereby supporting loop-back capability (e.g. loop back due to reflections from the gratings with a second traversal of the couplers in the system).

Allowable Subject Matter

6. Claims 10 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

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AGUSTIN BELLO
PATENT EXAMINER
2/14/05